

What is claimed is:

1. A computed tomography apparatus comprising:
  - a data acquisition unit configured to acquire projection data of a radiographic region within a subject using a multirow detector; and
  - an image reconstruction unit configured to reconstruct an image of the radiographic region on the basis of both the projection data and additional data calculated from the projection data.
2. A computed tomography apparatus comprising:
  - a data acquisition unit configured to acquire projection data of a radiographic region within a subject using a multirow detector; and
  - an image reconstruction unit configured to reconstruct an image of the radiographic region on the basis of both two-dimensional projection data which are extracted from the projection data acquired by said data acquisition unit, and two-dimensional data which are extracted from three-dimensional data calculated on the basis of three-dimensional partial data extracted from the projection data acquired by said data acquisition unit.
3. A computed tomography apparatus as defined in claim 1, wherein the additional data are parallel projection data.
4. A computed tomography apparatus as defined in claim 1, wherein said image reconstruction unit reconstructs the image

of the radiographic region on the basis of fan beam data which are obtained from cone beam data as the projection data, and two-dimensional parallel beam data which are obtained from three-dimensional parallel beam data as the additional data.

5. A computed tomography apparatus as defined in claim 1, wherein:

said data acquisition unit acquires the projection data by helical scan; and

said image reconstruction unit extracts approximate projection data and approximate additional data as are approximate to a set reconstruction plane from the projection data and the additional data, and reconstructs the image on the basis of the respective approximate projection data.

6. A computed tomography apparatus as defined in claim 5, wherein the reconstruction plane is set as an oblique section which tilts with respect to a center axis of the helical scan.

7. A computed tomography apparatus as defined in claim 5, wherein said image reconstruction unit sets a plurality of reconstruction planes so as to be spatially continuous, and reconstructs images on the respective reconstruction planes to obtain volume data.

8. A computed tomography apparatus as defined in claim 5, wherein:

the helical scan is performed in such a way that an X-ray source moves on a helical trajectory relatively to the subject;

and

the reconstruction plane is set as a plane which is approximate to a curved plane that is depicted by a plurality of X-ray paths while the X-ray source rotates substantially 180 degrees.

9. A computed tomography apparatus as defined in claim 5, wherein said image reconstruction unit successively generates parallel beam data sets so as to approximate beam data of a plurality of reconstruction planes set along a helical trajectory, extracts beam data sets approximating a predetermined reconstruction plane from the generated parallel beam data sets, interpolates projection data sets of the predetermined reconstruction plane from the beam data sets, and reconstructs the image on the basis of the projection data sets generated by the interpolation processing.

10. A computed tomography apparatus as defined in claim 5, wherein said image reconstruction unit generates parallel beam projection data in a pseudo closed domain which is held between opposing source trajectory parts of a helical trajectory, generates approximate data for half reconstruction of the reconstruction plane on the basis of the parallel beam projection data and acquired fan beam projection data, and reconstructs the image on the basis of the approximate data.

11. A computed tomography apparatus as defined in claim 5, wherein said image reconstruction unit generates parallel

beam projection data in a pseudo closed domain which is held between opposing source trajectory parts of a helical trajectory, further generates parallel beam projection data in a pseudo closed domain which is held between two opposing trajectory parts nearest to a helical trajectory that determines a tilt plane, generates approximate data for full reconstruction of the reconstruction plane on the basis of the parallel beam projection data and acquired fan beam projection data, and reconstructs the image on the basis of the approximate data.

12. A computed tomography apparatus comprising:  
a data acquisition unit configured to acquire projection data of a radiographic region within a subject using a multirow detector; and  
an image reconstruction unit configured to extract from the projection data, approximate projection data of X-ray paths that approximate a reconstruction plane not being always orthogonal to a rotational center axis of the multirow detector, and to reconstruct an image of the radiographic region on the basis of the approximate projection data;

wherein said image reconstruction unit selects approximate fan beams or approximate parallel beams every point of the reconstruction plane, and reconstructs the image of the radiographic region using approximate beams.

13. A computed tomography apparatus as defined in claim 12, wherein the approximate fan beams or approximate parallel

beams which are used every point of the reconstruction plane include a beam which includes the point.

14. A computed tomography apparatus as defined in claim 12, wherein the beam group which is used every point of the reconstruction plane consists of the approximate fan beams.

15. A computed tomography apparatus as defined in claim 1, wherein fan beams or parallel beams are used every point of the reconstruction plane, and they include a beam which approximates the point.

16. A computed tomography apparatus as defined in claim 14, wherein the approximate fan beams or approximate parallel beams which are used every point of the reconstruction plane include a beam which includes the point.

17. A computed tomography apparatus comprising:  
a data acquisition unit configured to acquire projection data of a radiographic region within a subject; and  
an image reconstruction unit configured to reconstruct a two-dimensional reconstruction image of the radiographic region on the basis of both fan beam data which are the projection data acquired by said data acquisition unit, and parallel beam data which are calculated from the fan beam data.

18. A computed tomography apparatus as defined in claim 17, wherein said image reconstruction unit generates a parallel beam data set necessary for generating the reconstruction image of the diagnostic part, on the basis of both the fan beam data

as subjected to parallel conversion and the parallel beam data, and reconstructs the image of the radiographic region on the basis of the data set.

19. A computed tomography apparatus as defined in claim 17, wherein said image reconstruction unit executes a reconstruction process using the fan beam data, and a reconstruction process using the parallel beam data, respectively, and reconstructs the final image by synthesizing reconstruction images obtained by the respective processes with each other.

20. A computed tomography apparatus as defined in claim 19, wherein said image reconstruction unit multiplies the fan beam data and the parallel beam data by two weighting functions which are divisions of "1 (one)", on a space which is set by a tilt angle of a beam and a distance of the beam from an origin or on a space which is a beam set equivalent to the first-mentioned space, respectively, thereafter executes a reconstruction process using the fan beam data and a reconstruction process using the parallel beam data, respectively, and reconstructs the final image by synthesizing reconstruction images obtained by the respective processes with each other.

21. A program which causes a computer mounted on a computed tomography apparatus, to execute:

a step of calculating additional data from projection data of a radiographic region within a subject as acquired using a

multirow detector; and

a step of reconstructing an image of the radiographic region on the basis of both the projection data and the additional data.

22. A program which causes a computer mounted on a computed tomography apparatus, to execute:

a step of extracting two-dimensional projection data from projection data of a radiographic region within a subject as acquired using a multirow detector;

a step of extracting three-dimensional data on the basis of three-dimensional partial data extracted from the acquired projection data;

a step of extracting two-dimensional data from the three-dimensional data; and

a step of reconstructing an image of the radiographic region on the basis of both the two-dimensional projection data and the two-dimensional extracted data.

23. A program which causes a computer mounted on a computed tomography apparatus, to execute:

a step of extracting from projection data of a radiographic region within a subject as acquired using a multirow detector, approximate projection data of X-ray paths which approximate a reconstruction plane not being always orthogonal to a rotational center axis of the multirow detector; and

a step of reconstructing an image of the radiographic

region on the basis of the approximate projection data; wherein the reconstructing step selects approximate fan beams or approximate parallel beams every point of the reconstruction plane, and reconstructs the image of the radiographic region using the approximate beams.

24. A program which causes a computer mounted on a computed tomography apparatus, to execute:

a step of calculating parallel beam data from fan beam data which are projection data of a radiographic region within a subject; and

a step of reconstructing a two-dimensional image of the radiographic region on the basis of both the fan beam data and the parallel beam data.